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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/561,079	02/09/2006	Harmannus Franciscus Schoo	0064.24	6057

25871 7590 04/21/2009

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EXAMINER	
YAM, STEPHEN K	

ART UNIT	PAPER NUMBER
2878	

NOTIFICATION DATE	DELIVERY MODE
04/21/2009	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

efspatents@sbiplaw.com

Office Action Summary	Application No.	Applicant(s)	
	10/561,079	SCHOO ET AL.	
	Examiner	Art Unit	
	STEPHEN YAM	2878	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 December 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-5 and 7-28* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5 and 7-28* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

This action is in response to Amendments and remarks filed on December 18, 2008. Claims 1-5 and 7-28 are currently pending.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1, 5, 13, 19-21, 23, 24, and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bradley et al. WO 02/42747 in view of Saren Johnston, *Sensible Sensors*, Ames Laboratory INSIDER Newsletter Vol. 13, No. 3 (March 2002), further in view of Spangenberg et al. US 6,485,687.

Regarding Claims 1, 20, and 21, Bradley et al. teach (See Fig. 1-2) an optical sensor and method for manufacturing, comprising a detection module (see Fig. 1-2), which detection module comprises an organic light emitting diode (8) (see Page 8, lines 5-10) and an organic detection photodiode (10) (see Page 8, lines 5-10) for measuring emitted light which during the use of the sensor reaches the photodiode via a sample holder (4). Bradley et al. do not teach the detection module comprising a flexible carrier, with the sample holder containing an active layer of which an optical property changes when the active layer is in contact with a component to be measured, and the sensor is of the reflective type. Johnston teaches a similar device with a detection module which comprises an organic light emitting diode (see Page 2, 1st paragraph)

and a detection photodetector (see Paragraph 2, paragraph 2), with a sample holder containing an active layer of which an optical property changes when the active layer is in contact with a component to be measured (see Page 1, 5th paragraph, Page 2, 2nd paragraph), and the sensor is of the reflective type ("back detection"- see Page 2, Paragraphs 1, 2, since the photo-detector is positioned behind the OLED). Additionally, Spangenberg et al. teach a similar sensor with a flexible carrier (see Col. 8, lines 3-6). It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the sample holder containing an active layer of which an optical property changes when the active layer is in contact with a component to be measured, and the sensor is of the reflective type, as taught by Johnston, and to provide a flexible carrier for the detection module, as taught by Spangenberg et al., in the device and method of Bradley et al., to provide a more effective and sensitive bio-sensor and provide all electronic components on a single electronic substrate for easier manufacturing, and to provide easier handling of specimens by using a flexible container.

Regarding Claim 5, Bradley et al. teach the organic light emitting diode, the organic detection photodiode and the sample holder are situated on or in a carrier material in one piece (see Fig. 1-2).

Regarding Claim 13, Bradley et al. teach the light emitting diode is a polymeric light emitting diode (see Page 8, lines 5-10) and having in the photoactive layer as electroluminescent compound a polymer selected from a group consisting of polyarylene compounds, poly(paraphenylene vinylene) compounds, polyfluorene compounds, polyacetylene compounds, polythiophene compounds, polypyrroles, polyanilines, including derivatives of said polymers, copolymers of said polymers and said polymers provided with a dye (see Page 8, lines 12-21).

Regarding Claim 19, Bradley et al. teach the optical sensor comprised substantially of plastic (see Page 7, lines 24-26).

Regarding Claim 20, Bradley et al. teach (see Fig. 1) an array of optical sensors each comprising a detection module, which detection module comprises an organic light emitting diode and an organic detection photodiode for measuring emitted light which during the use of the sensor reaches the photodiode via a sample holder according to claim 1.

Regarding Claim 23, Bradley et al. teach one of the light emitting diode and the photodiode is manufactured by means of injection molding, printing (see Page 8, lines 12-14), dip coating, vacuum deposition or spin coating.

Regarding Claim 24, Bradley et al. teach (see Fig. 2) the diodes are manufactured on at least one of a surface of the waveguide, a surface of a carrier material (2) for the detection module, an electronic circuit and the reference module.

Regarding Claim 26, Bradley et al. teach the detection module is built up integrally (see Fig. 2 and Page 8, lines 1-21).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 3, 4, 12, 14, and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bradley et al. in view of Marsoner et al. US 5,039,490

Regarding Claims 3, 4, and 22, Bradley et al. teach the device in Claim 1, according to the appropriate paragraph above. Bradley et al. do not teach the sensor comprises an organic reference photodiode (2, 2b) for measuring a reference signal coming from said light emitting diode of the detection module or from a second light emitting diode, with the referenced photodiode forming part of a reference module, which reference module optionally further comprises a blank holder. Marsoner et al. teach a similar device with duplicate components for measuring a reference signal coming from a light source (see Col. 1, lines 31-43), the reference diode forming part of a reference module, which reference module optionally further comprises a blank holder (see Col. 1, lines 31-43). It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a duplicate reference photodiode for measuring a reference signal from the light source, the reference diode forming part of a reference module, which reference module optionally further comprises a blank holder, as taught by Marsoner et al., in the device of Bradley et al., to provide improved accuracy for a measured value and discrimination of a positive detection of an analyte.

Regarding Claim 12, Bradley et al. teach the components situated on or embedded in a plastic carrier material which is provided with an electronic circuit (see Page 7, lines 24-26).

Regarding Claim 14, Bradley et al. teach the detection photodiode as a polymeric photodiode (see Page 8, lines 1-10).

5. Claims 7-9, 11, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bradley et al. in view of Aylott et al. US 6,331,438.

Regarding Claim 7, Bradley et al. teach the device in Claim 1, according to the appropriate paragraph above. Bradley et al. do not teach the light emitting diode and the photodiode in the detection module and optionally in the reference module are connected with each other through a plastic waveguide. Aylott et al. teach a similar device with a light source and a photodiode connected to each other through a plastic waveguide (see Col. 6, lines 8-14). It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the light source and the photodiode connected to each other through a plastic waveguide, as taught by Aylott et al., in the device of Bradley et al., to provide improved light distribution and channeling for optimal detection contrast.

Regarding Claims 8, 9, and 11, Bradley et al. in view of Aylott et al. teach the device in Claim 7, according to the appropriate paragraph above. Bradley et al. do not teach the waveguide having a trapezoidal shape or the top side and the base side substantially parallel to each other or the angle between the base side and at least one oblique side as 10-70°. It is well known in the art to provide an appropriate optical path for a source-detector optical system, depending on the desired dimensions and space requirements of the system. it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the waveguide having a trapezoidal shape or the top side and the base side substantially parallel to each other or the angle between the base side and at least one oblique side as 10-70°, in the device of Bradley et al. in view of Aylott et al., since it has been held that rearranging parts of an invention involves only routine skill in the art. *In re Japikse*, 86 USPQ 70.

Regarding Claim 15, Bradley et al. in view of Aylott et al. teach the device in Claim 7, according to the appropriate paragraph above. Bradley et al. do not teach the waveguides using

the particularly claimed plastics. It is well known in the art to utilize an appropriate material for a waveguide, depending on the desired optical properties, cost, and other design considerations. It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the waveguides using the particularly claimed plastics, in the device of Bradley et al. in view of Aylott et al., since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

6. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bradley et al. in view of Aylott et al., further in view of Carr et al. US 6,045,756.

Regarding Claim 10, Bradley et al. in view of Aylott et al. teach the device in Claim 8, according to the appropriate paragraph above. Bradley et al. do not teach at least one of the oblique sides of the plastic waveguide is provided with a reflecting layer. Carr et al. teach (see Fig. 3) a similar device with a waveguide (64, 66, 58) and at least one of the oblique sides of the plastic waveguide is provided with a reflecting layer (64/66). It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide at least one of the oblique sides of the plastic waveguide is provided with a reflecting layer, as taught by Carr et al., in the device of Bradley et al. in view of Aylott et al., to provide a reflective system to provide the light source and detector on a single platform for reduced height and profile of the system and for easier manufacturing.

7. Claims 16-18, 25, and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bradley et al. in view of Carr et al.

Regarding Claim 16, Bradley et al. teach the device in Claim 1, according to the appropriate paragraph above. Bradley et al. do not teach the sample holder containing an active layer of which an optical property changes when the active layer is in contact with a component to be measured. Carr et al. teach (see Fig. 3) a similar device with a sample holder (70) containing an active layer of which an optical property changes when the active layer is in contact with a component to be measured (see Col. 5, line 62 to Col. 6, line 14). It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the sample holder containing an active layer of which an optical property changes when the active layer is in contact with a component to be measured, as taught by Carr et al., in the device of Bradley et al., to provide a clear indication of a specific desired property to be sensed, as taught by Carr et al. (see Col. 5, line 62 to Col. 6, lines 14).

Regarding Claims 17 and 18, Bradley et al. in view of Carr et al. teach the device in Claim 16, according to the appropriate paragraph above. Carr et al. also teach the optical property of the active layer changes as a result of the presence of various example components (see Col. 6, lines 2-14). Bradley et al. do not teach the particular active layer characteristics in Claim 17 or the optical property of the active layer changes as a result of the presence of a component selected from the group consisting of alcohols. It is well known in the art to select appropriate materials in an analyte sensing system, depending on the desired characteristic to be sensed. It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the particular active layer characteristics in Claim 17 or the optical property

of the active layer changes as a result of the presence of a component selected from the group consisting of alcohols, in the device of Bradley et al. in view of Carr et al., to sense a specific desired material using a known indicator, as is known by those of ordinary skill in the art.

Regarding Claim 25, Bradley et al. teach the method in Claim 21, according to the appropriate paragraph above. Bradley et al. do not teach providing a waveguide that is manufactured by means of injection molding or extrusion. Carr et al. teach (see Fig. 3) a similar device and method, with providing a plastic waveguide (58) (see Col. 5, lines 1-3). Furthermore, it is well known in the art to manufacture plastic components using injection molding. It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a plastic waveguide, as taught by Carr et al., manufactured using injection molding or extrusion, in the method of Bradley et al., to provide a reflective system to provide the light source and detector on a single platform for reduced height and profile of the system and for easier manufacturing of the device.

Regarding Claim 28, Bradley et al. teach the method in Claim 21, according to the appropriate paragraph above. Bradley et al. do not teach the sensor is provided with one of a plastic and metal covering layer, and the sample holder remains at least substantially free of the covering layer. Carr et al. teach (see Fig. 3) a similar device and method with the sensor provided with one of a plastic and metal covering layer (52) (see Col. 4, lines 56-61), and a sample holder (70) remains at least substantially free of the covering layer (see Fig. 3). It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the sensor with one of a plastic and metal covering layer, and the sample holder remains at least substantially free of the covering layer, as taught by Carr et al., in the method of Bradley

et al., to provide a sturdy housing to protect the internal components from damage, as taught by Carr et al. (see Col. 4, lines 56-61 and Fig. 3).

8. Claims 2 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bradley et al.

Regarding Claim 2, Bradley et al. teach the device in Claim 1, according to the appropriate paragraph above. Bradley et al. do not teach the photodiode as a photovoltaic cell. It is well known in the art to provide a photodiode as performing photovoltaic function (forward bias), to provide reduced electronic noise in comparison with other operating modes. It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the photodiode as a photovoltaic cell, in the device of Bradley et al., to maximize the signal-noise ratio of the photodiode for an improved detection signal.

Regarding Claim 27, Bradley et al. teach the method in Claim 21, according to the appropriate paragraph above. Bradley et al. also teach the light emitting diode and the detection photodiode provided in association with the same carrier material (2). Bradley et al. do not teach the carrier materials as one carrier material and the carrier material then folded. It is well known in the art to provide a flexible substrate carrier material such as a flexible printed circuit board (FPCB) which is folded along certain angles and curve points, to provide a simple method of constructing a circuit device with a desired profile and configuration. It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the carrier materials as one carrier material and the carrier material then folded, in the method of Bradley et al., for improved integration and configurability of the device components, since it

has been held that rearranging parts of an invention involves only routine skill in the art. *In re Japikse*, 86 USPQ 70.

Response to Arguments

9. Applicant's arguments with respect to claims 1-5 and 7-28 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to STEPHEN YAM whose telephone number is (571)272-2449. The examiner can normally be reached on Monday-Friday 8:30am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Georgia Epps can be reached on (571)272-2328. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Stephen Yam/
Primary Examiner, Art Unit 2878